

WHAT IS CLAIMED IS:

1. A photosensor system comprising
a photosensor array constituted by two-
dimensionally arraying a plurality of photosensors,

5 image reading means for reading a subject image at
a predetermined reading sensitivity by the photosensor
array:

pre-reading means for reading the subject image
prior to image reading operation while changing an
10 image reading sensitivity of the photosensor array at
a plurality of stages;

optimal reading sensitivity extraction means for
extracting an optimal image reading sensitivity
suitable for the image reading operation on the basis
15 of a predetermined measurement amount relating to
an image pattern of the subject image read by said
pre-reading means; and

reading sensitivity setting means for setting
the optimal image reading sensitivity to a reading
20 sensitivity of said image reading means.

2. A system according to claim 1, wherein said
reading by the image reading means is executed by
setting different image reading sensitivities stepwise
for respective rows of the photosensor array and
25 reading the subject image.

3. A system according to claim 1, wherein the
predetermined measurement amount in said reading

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sensitivity extraction means is lightness data corresponding to the image pattern of the subject image read by pre-reading operation.

5 4. A system according to claim 1, wherein the image reading sensitivity of the photosensor array is set by adjusting a charge accumulating period of the photosensor.

10 5. A system according to claim 1, which further comprises, in said image reading means and said pre-reading means in the photosensor array, effective voltage adjustment means for applying to each photosensor a correction signal for setting to optimal values effective voltages of signal voltages applied to the each photosensor.

15 6. A system according to claim 1, wherein said reading sensitivity extraction means comprises:

20 measurement amount comparison means for extracting maximum and minimum values of the measurement amount relating to the image pattern of the subject image for each image reading sensitivity on the basis of the subject image read by pre-reading operation;

25 dynamic range calculation means for calculating a dynamic range of the measurement amount on the basis of the maximum and minimum values of the measurement amount extracted for each image reading sensitivity; and

maximum dynamic range extraction means for

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extracting an image reading sensitivity having a maximum dynamic range among dynamic ranges of measurement amounts calculated for each image reading sensitivity.

5 7. A system according to claim 6, wherein said measurement amount comparison means extracts the maximum and minimum values of the measurement amount in a predetermined column range of each row.

10 8. A system according to claim 1, wherein said reading sensitivity extraction means comprises:

displacement calculation means for calculating a displacement of the measurement amount relating to the image pattern of the subject image between image reading sensitivities on the basis of the subject image read by pre-reading operation; and

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maximum displacement extraction means for extracting an image reading sensitivity having a maximum displacement among displacements of measurement amounts between image reading sensitivities.

20 9. A system according to claim 8, wherein said displacement calculation means calculates a differentiated value of the measurement amount on predetermined columns of each row.

25 10. A system according to claim 1, wherein said reading sensitivity extraction means comprises:

measurement amount comparison means for extracting maximum and minimum values of the measurement amount

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relating to the image pattern of the subject image for each image reading sensitivity on the basis of the subject image read by pre-reading operation;

dynamic range calculation means for calculating
5 a dynamic range of the measurement amount on the basis of the maximum and minimum values of the measurement amount extracted for each image reading sensitivity; and

maximum dynamic range extraction means for
10 extracting an image reading sensitivity at which the dynamic range of the measurement amount for each image reading sensitivity maximizes and a displacement of the dynamic range between image reading sensitivities minimizes.

11. A system according to claim 1, which further
15 comprises abnormal value removing means for removing an abnormal value deviating from a main change trend of the measurement amount, from the measurement amount relating to the image pattern of the subject image read
20 by pre-reading operation.

12. A system according to claim 11, wherein said
abnormal value removing means removes the abnormal value by performing Fourier transformation for the measurement amount and removing a predetermined
25 high-frequency component from the frequency-converted measurement amount.

13. A system according to claim 1, which further

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comprises:

measurement amount comparison means for extracting maximum and minimum values of the measurement amount relating to the image pattern of the subject image for each image reading sensitivity on the basis of the subject image read by pre-reading operation;

dynamic range calculation means for calculating a dynamic range of the measurement amount on the basis of the maximum and minimum values of the measurement amount extracted for each image reading sensitivity;

specific value extraction means for extracting for each image reading sensitivity a specific value at which the dynamic range of the measurement amount for each image reading sensitivity maximizes and a displacement of the dynamic range between image reading sensitivities maximizes; and

abnormality determination means for determining presence/absence of an abnormality contained in the subject image on the basis of the specific value.

14. A system according to claim 1, wherein

each photosensor has a source electrode and drain electrode formed via a channel region made from a semiconductor layer, and a top gate electrode and bottom gate electrode formed at least on and below the channel region via insulating films,

either of the top gate electrode and bottom gate electrode is used as a light irradiation side, and

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charges corresponding to a light quantity irradiated from the light irradiation side are generated and accumulated in the channel region.

15. A drive control method for a photosensor system having a photosensor array constituted by two-dimensionally arraying a plurality of photosensors comprising the steps of:

executing pre-reading operation of reading a subject image while changing an image reading sensitivity of the photosensor array at a plurality of stages;

extracting an image reading sensitivity suitable for reading operation of the subject image on the basis of a predetermined measurement amount relating to an image pattern of the subject image read by the pre-reading operation;

setting the extracted image reading sensitivity as a reading sensitivity in the reading operation of the subject image; and

executing image reading operation of reading the subject image at the set reading sensitivity.

16. A method according to claim 15, wherein the pre-reading operation is executed by setting different image reading sensitivities stepwise for respective rows of the photosensor array and reading the subject image.

17. A method according to claim 15, wherein the

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predetermined measurement amount is lightness data corresponding to the image pattern of the subject image read by the pre-reading operation.

18. A method according to claim 15, wherein the
5 image reading sensitivity of the photosensor array is set by adjusting a charge accumulating period of the photosensor.

19. A method according to claim 15, wherein the
10 step of extracting the image reading sensitivity comprises the steps of:

extracting maximum and minimum values of the
measurement amount relating to the image pattern of the
subject image for each image reading sensitivity on the
basis of the subject image read by the pre-reading
15 operation;

calculating a dynamic range of the measurement
amount on the basis of the maximum and minimum values
of the measurement amount extracted for each image
reading sensitivity; and

20 extracting an image reading sensitivity having a maximum dynamic range among dynamic ranges of measurement amounts calculated for each image reading sensitivity.

20. A method according to claim 15, wherein the
25 step of extracting the image reading sensitivity comprises the steps of:

calculating a displacement of the measurement

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amount relating to the image pattern of the subject image between image reading sensitivities on the basis of the subject image read by the pre-reading operation; and

5 extracting an image reading sensitivity at which a displacement of the measurement amount between image reading sensitivities maximizes.

21. A method according to claim 15, wherein the step of extracting the image reading sensitivity
10 comprises the steps of:

extracting maximum and minimum values of the measurement amount relating to the image pattern of the subject image for each image reading sensitivity on the basis of the subject image read by the pre-reading
15 operation;

calculating a dynamic range of the measurement amount on the basis of the maximum and minimum values of the measurement amount extracted for each image reading sensitivity; and

20 extracting an image reading sensitivity at which the dynamic range of the measurement amount for each image reading sensitivity maximizes and a displacement of the dynamic range between image reading sensitivities minimizes.

22. A method according to claim 15, wherein the step of extracting the image reading sensitivity
25 comprises the steps of:

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extracting maximum and minimum values of the measurement amount relating to the image pattern of the subject image for each image reading sensitivity on the basis of the subject image read by the pre-reading operation;

calculating a dynamic range of the measurement amount on the basis of the maximum and minimum values of the measurement amount extracted for each image reading sensitivity;

extracting a specific value at which the dynamic range of the measurement amount for each image reading sensitivity maximizes and a displacement of the dynamic range between image reading sensitivities maximizes; and

determining presence/absence of an abnormality contained in the subject image on the basis of the specific value.

23. A method according to claim 15, wherein the step of extracting the image reading sensitivity comprises the step of:

removing an abnormal value deviating from a main change trend of the measurement amount, from the measurement amount relating to the image pattern of the subject image for each image reading sensitivity.

24. A method according to claim 23, wherein the step of removing the abnormal value from the measurement amount comprises the step of:

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performing Fourier transformation for the measurement amount and removing a predetermined high-frequency component from the frequency-converted measurement amount.

5 25. A method according to claim 15, wherein

each photosensor has a source electrode and drain electrode formed via a channel region made from a semiconductor layer, and a top gate electrode and bottom gate electrode formed at least on and below the channel region via insulating films,

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either of the top gate electrode and bottom gate electrode is used as a light irradiation side, and

charges corresponding to a light quantity irradiated from the light irradiation side are generated and accumulated in the channel region.

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